Final

Supplemental Remedial Investigation
Site-Specific Field Sampling Plan,
Site-Specific Safety and Health Plan, and
Site-Specific Unexploded Ordnance Plan Attachments
Ranges Near Training Area T-24A, Parcels 187(7), 112Q, 113Q-X, 213Q, and 214Q

Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602

Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

Task Order CK10
Contract No. DACA21-96-D-0018
IT Project No. 796887

September 2000

Revision 1

Final

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Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Task Order CK10, IT Corporation (IT) will conduct a supplemental remedial investigation of the Ranges Near Training Area T-24A at Fort McClellan, Calhoun County, Alabama to determine the nature and extent of contamination at the site resulting from U.S. Army chemical waste disposal and training activities. The purpose of this site-specific field-sampling plan is to provide technical guidance for sampling activities at the Ranges Near Training Area T-24A.

The Ranges Near Training Area T-24A consist of the following five parcels:

- Former Chemical Munitions Disposal Area, Parcel 187(7)
- Former Machine Gun Range, Parcel 112Q
- Former Demolition Area, Parcel 113Q-X
- Former Bandholtz Machine Gun Qualification Range, Parcel 213Q
- Bandholtz Field Firing Range, Parcel 214Q.

The Former Chemical Munitions Disposal Area, Parcel 187(7) occupies approximately 1.5 acres. The parcel is fenced and posted. This former chemical munitions disposal training site was used from an unknown date until 1973. Training sites within the parcel included two square burning pits, each measuring approximately 16 by 16 feet. Training activities conducted at this site reportedly included disposal of chemical warfare munitions filled with phosgene, 3-quinuclidinyl benzilate, Sarin, and distilled mustard. The decontaminants reportedly used on this site were supertropical bleach, and Decontamination Solution Number 2. The Former Machine Gun Range, Parcel 112Q covers approximately 1,400 acres. The dates of use and types of ordnance fired at this range are unknown, but the range appears on a 1959 map. A linear east-west trending mound parallel to the access road is present in the western portion of the study area. The Former Demolition Area, Parcel 113Q-X is located in the central portion of the study overlapping the area designated as Parcel 187(7). The Former Demolition Area, Parcel 113Q-X, occupies approximately 3 acres. The dates of use and types of activities that occurred here are unknown, but this area is identified as a demolition area on a 1959 map. The area of Parcel 213Q is approximately 460 acres. Evidence of the firing line of the Former Bandholtz Machine Gun Qualification Range, Parcel 213Q appears as a north-south trending level area along an east-facing slope at the study area. The impact area for this range appears to be approximately 1,600 feet to 2,000 feet due east of the firing line in an area characterized by conical mounds and circular surface depressions interconnected with shallow (less than 1 foot to 3 feet deep)

trenches. Ordnance fired at this range is assumed to have been restricted to small arms. The Bandholtz Field Firing Range, Parcel 214Q has an area of over 1,900 acres. The firing line appears as a northwest-southeast trending level area on the east-facing slope of the study area. The target area and probable impact areas were not observed in a recent site walk by IT, but are likely to be in the vicinity of a west-facing slope approximately 1,000 feet northeast of the firing line. Ordnance fired at this range is assumed to have been restricted to small arms.

The elevation at the Ranges Near Training Area T-24A extends from approximately 985 feet above mean sea level to 1,145 feet above mean sea level, with the ground surface sloping from the southeast to the northwest across the site. A small creek, which bisects several of the ranges, flows north along a small valley to the South Branch Cane Creek.

To address known groundwater contamination and determine whether contamination from fire arm use is present, IT will collect 29 surface soil samples, 8 subsurface soil samples, 37 groundwater samples (from 18 existing and 19 proposed monitoring wells), 7 surface water samples, and 7 sediment samples at this site. Potential contaminant sources at the Ranges Near Training Area T-24A, include chemical warfare material (CWM) decontamination agents and toxic agents and munitions. Chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, metals, CWM breakdown products and explosives. In addition, sediment samples will be analyzed for total organic carbon and grain size. Results from these analyses will be integrated with results from site investigation results from nearby Range 24A Fog Oil Drum Storage Area, Parcel 88(6), and Range 24A Multipurpose Range, Parcel 108(7). The combined data will be compared with site-specific screening levels specified in the installation-wide work plan and regulatory agency guidelines.

The possibility of unexploded ordnance (UXO) exists at the Ranges Near Training Area T-24A; therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at the Ranges Near Training Area T-24A. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance.

Prior to IT conducting any field work at the site, the U.S. Army Corps of Engineers-Huntsville will clear the site for CWM. Therefore, data related to CWM will not be collected as part of this supplemental remedial investigation. A CWM investigation will be provided in the CWM Site

Engineering Evaluation/Cost Analysis that is being proposed by U.S. Army Corps of Engineers-Huntsville.

This site-specific field-sampling plan attachment to the installation-wide sampling and analysis plan (SAP) for Ranges Near Training Area T-24A will be used in conjunction with the site-specific safety and health plan, the site-specific UXO safety plan, the installation-wide work plan, and the SAP. The SAP includes the installation-wide safety and health plan, waste management plan, ordnance and explosives management plan and quality assurance plan. Site-specific hazard analyses are included in the site-specific health and safety plan and site-specific UXO safety plan.

1.0 Project Description

1.1 Introduction

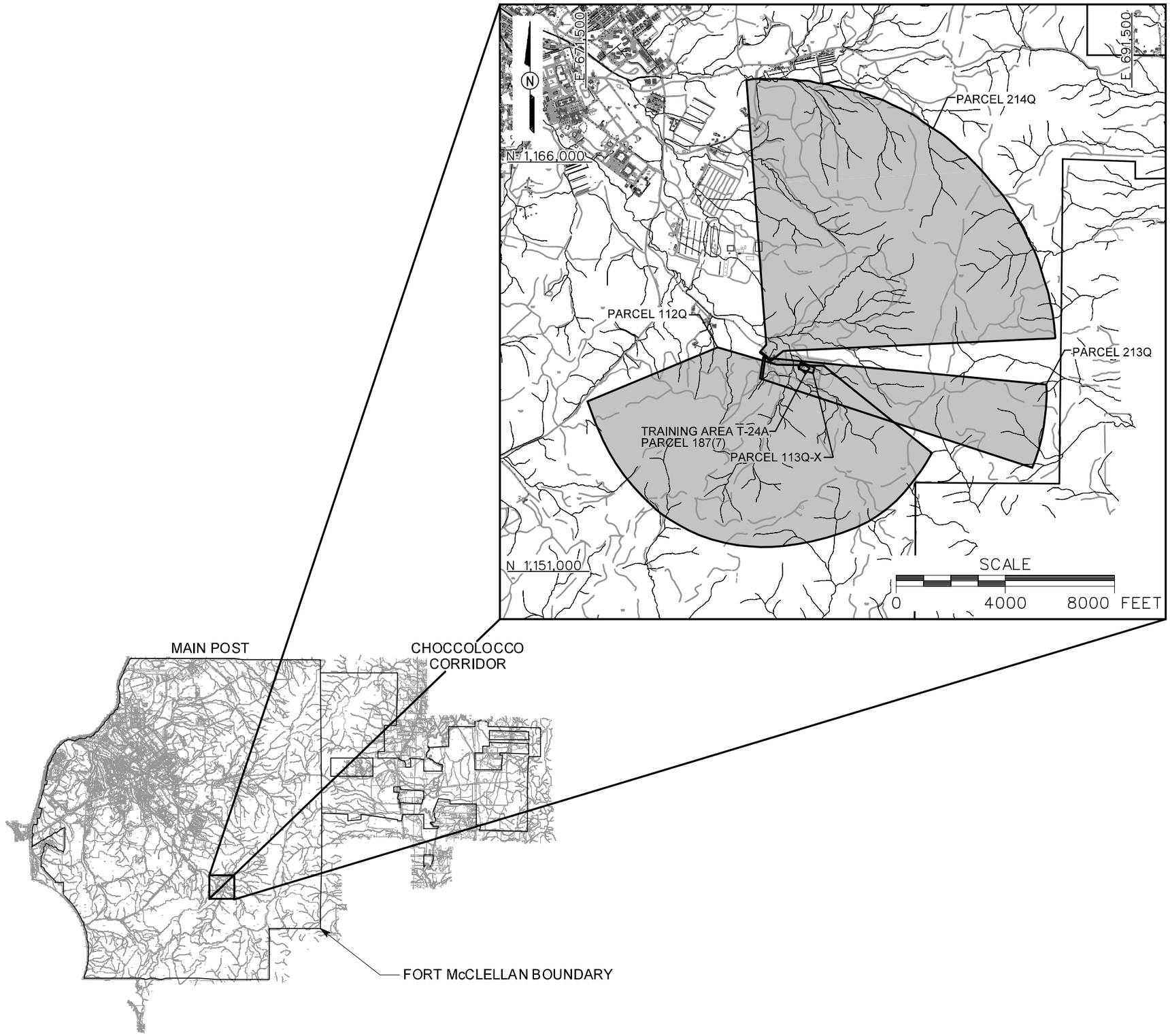
The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the supplemental remedial investigation (RI) of the Former Chemical Munitions Disposal Area, Training Area T-24A, Parcel 187(7), and site investigations (SI) of:

- The Former Machine Gun Range, Parcel 112Q
- The Former Demolition Area, Parcel 113Q-X
- Former Bandholtz Machine Gun Qualifying Range, Parcel 213Q
- Former Bandholtz Field Firing Range, Parcel 214Q.

The investigations are being performed concurrently under Task Order CK10, Contract Number DACA21-96-D-0018 and are referred to in this document hereinafter as the supplemental RI at the Ranges Near Training Area T-24A.

This supplemental RI site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 2000a) for FTMC has been prepared to provide technical guidance and rationale for sample collection and analysis at the Ranges near Training Area T-24, (Figure 1-1). The objective of this supplemental RI is to define the extent of benzene contamination in groundwater associated with of the Former Chemical Munitions Disposal Area, Parcel 187(7), and determine whether lead contamination from the Former Machine Gun Range, Parcel 112Q, Former Demolition Area, Parcel 113Q-X, Former Bandholtz Machine Gun Qualifying Range, Parcel 213Q, and Former Bandholtz Field Firing Range, Parcel 214Q is present. IT will collect samples at these parcels as part of a supplemental RI effort to characterize the source and the nature and extent of groundwater contamination. The data collected will be used to evaluate the level of risk to human health and the environment posed by releases of chemicals. The supplemental RI SFSP will be used in conjunction with the site-specific safety and health plan (SSHP), and the site-specific unexploded ordnance (UXO) safety plan, and the installation-wide work plan (WP) (IT, 1998) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, ordnance and explosives management plan, and quality assurance plan (QAP).

1.2 FTMC Site Description and History



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK

FIGURE 1-1
SITE LOCATION MAP
RANGES NEAR TRAINING
AREA T-24A
PARCELS 187(7), 112Q, 113Q-X, 213Q
AND 214Q

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

STARTING DATE: 04/13/00 | DRAWN BY: D. BILLINGSLEY | DRAWN BY: | DATE LAST REV.: | 09/25/00
PROJ. MGR.: J. YACOUB | ENGR. CHCK. BY: J. JENKINS | DRAFT. CHCK. BY: | 01:23:04
INITIATOR: J. JENKINS | PROJ. NO.: 796887 | DWG. NO.: ...\796887es.064 | DBILLING
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FTMC is located in the foothills of the Appalachian Mountains of northeastern Alabama near the cities of Anniston and Weaver in Calhoun County. FTMC is approximately 60 miles northeast of Birmingham, 75 miles northwest of Auburn, and 95 miles west of Atlanta, Georgia. FTMC consists of two main areas of government-owned properties: the Main Post and Pelham Range. A third area, designated Choccolocco Corridor, was previously leased from the state of Alabama, however the lease was terminated in May 1998. The size of each property is presented below:

- Main Post 18,929 acres
- Pelham Range 22,245 acres
- Choccolocco Corridor 4,488 acres (formerly leased).

The Main Post is bounded on the east by the Choccolocco Corridor, which connects the Main Post with the Talladega National Forest. Pelham Range is located approximately 5 miles west of the Main Post and adjoins the Anniston Army Depot on the southwest. Pelham Range is bordered on the east by U.S Highway 431 and privately owned land.

FTMC is under the jurisdiction of the U.S. Army Training and Doctrine Command. Until September 1999, the installation housed three major organizations, including the U.S. Army Military Police School, the U.S. Army Chemical School, and the Training Center (under the direction of the training brigade), in addition to other major support units and tenants.

The U.S. government purchased 18,929 acres of land near Anniston in 1917 for use as an artillery range and a training camp due to the outbreak of World War I. The site was named Camp McClellan in honor of Major General George B. McClellan, a former leader of the Union Army during the Civil War. Camp McClellan was used to train troops for World War I from 1917 until the armistice. It was then designated as a demobilization center. Between 1919 and 1929, Camp McClellan served as a training area for active army units and other civilian elements. Camp McClellan was redesignated as FTMC in 1929 and continued to serve as a training area.

In 1940, the government acquired an additional 22,245 acres west of FTMC. This tract of land was named Pelham Range. In 1941, the Alabama legislature leased approximately 4,488 acres to the U.S. government to provide an access corridor from the Main Post to Talladega National Forest. This corridor formerly provided access to additional woodlands for training. This lease was terminated in May 1998.

The U.S. Army operated the Chemical Corps School at FTMC from 1951 until the school was deactivated in 1973. The Chemical Corps School offered advanced training in all phases of chemical, biological, and radiological warfare to students from all branches of the military service.

Until its closure in May 1999, activities at FTMC could be divided into support activities, academic training, and practical training. Support activities included housing, feeding, and moving individuals during training. Academic training included classroom, laboratory, and field instruction. Practical training included weapons, artillery and explosives, vehicle operation and maintenance, and physical and tactical training activities.

1.3 Site Description and History

The Ranges Near Training Area T-24A, consist of the following five parcels:

- Former Chemical Munitions Disposal Area, Training Area T-24A, Parcel 187(7)
- Former Machine Gun Range, Parcel 112Q
- Former Demolition Area, Parcel 113Q-X
- Former Bandholtz Machine Gun Qualification Range, Parcel 213Q
- Bandholtz Field Firing Range, Parcel 214Q.

The elevation at the Ranges Near Training Area T-24A ranges from approximately 985 feet to 1,145 feet, with the ground surface sloping from the southeast to the northwest across the site. A small creek, which bisects several of the ranges, flows north along a small valley to the South Branch Cane Creek.

The soils at the Ranges Near Training Area T-24A are composed of the Anniston and Allen Series soils. The Anniston and Allen Series of soils consists of strongly acid, deep, well drained soils that have developed in old local alluvium. The parent material washed from the adjacent higher lying Linker, Muskingum, Enders, and Montevallo soils, which developed from weathered sandstone, shale, and quartzite. These sites contain sandstone and quartzite gravel and cobbles, which measure as much as 8 inches in diameter on the surface and throughout the soil. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high. Organic matter is moderately low (U.S. Department of Agriculture, 1961).

The combined area of the five parcels is approximately 3,900 acres as shown on Figure 1-1. Two additional parcels, Range 24A Multi-Purpose Range, Parcel 108(7)/82Q-X, and the Fog Oil Drum Storage, Parcel 88(6), overlap the area encompassing the Ranges near Training Area

T24A, and were the subject of separate SIs in December 1999. A summary of the results of the SIs is presented in Section 2.0. A description of the five parcels associated with the Ranges Near Training Area T-24A is presented in the following subsections.

1.3.1 Former Chemical Munitions Disposal Area, Training Area T-24A, Parcel 187(7) Site Description and History

The Former Chemical Munitions Disposal Area, Parcel 187(7) occupies approximately 1.5 acres and is located near the center of several overlapping ranges (Figure 1-2). The parcel is fenced and posted. This former chemical munitions disposal training site was used from an unknown date until 1973. Training sites within the parcel included two square burning pits, each measuring approximately 16 by 16 feet, however the precise locations of these pits is unknown. Training activities conducted at this site reportedly included disposal of chemical warfare munitions filled with:

- Phosgene (CG)
- 3-quinuclidinyl benzilate (BZ)
- Sarin (GB)
- Distilled mustard (HD).

CG. Phosgene (carbonyl chloride) is normally a chemical agent with short duration of effectiveness and was used extensively in World War I. CG has a low boiling point and hydrolyzes to hydrogen chloride and carbon dioxide. Benzene is commonly used as a solvent with CG.

BZ. 3-quinuclidinyl benzilate is an incapacitating agent. BZ is packed in munitions in micropulverized form and is used in burning mixtures, which aerosolize the agent.

GB. Sarin is a toxic agent. It is a colorless liquid, which has variable hydrolyses rates and hydrolyses products depending on the pH. GB has a high boiling point.

HD. Distilled mustard (bis-(2-chloroethyl)) sulfide is an oily chemical that has a high boiling point. HD was used extensively in World War I. HD hydrolyzes quickly in nature. If diluted, it degrades to form thiodiglycol and if concentrated, it forms either 1,4-dithiane or 1,4-oxathiane.

The decontaminants reportedly used on this site were:

E 678,000

E 679,500

E 681,000

N 1,158,900

N 1,156,900

N

POTENTIAL IMPACT AREA FOR PARCEL 214Q

APPROXIMATE FIRING RANGE LOCATION FOR PARCEL 214Q

APPROXIMATE FIRING RANGE LOCATION FOR PARCEL 112Q

POTENTIAL IMPACT AREA FOR PARCEL 112Q

PARCEL 113Q-X

FLOW DIRECTION

POTENTIAL FORMER TRAINING PITS, (SAIC, 1999)

TRAINING AREA T-24A, PARCEL 187(7)

APPROXIMATE FIRING RANGE LOCATION FOR PARCEL 213Q

POTENTIAL IMPACT AREA FOR PARCEL 213Q

FLOW DIRECTION

FLOW DIRECTION

LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 25 FOOT)
- TREES / TREELINE
- PARCEL BOUNDARY
- BRIDGE
- SURFACE DRAINAGE / CREEK
- FENCE
- THRUST FAULT
- AREAS OF MOUNDS AND TRENCHES
- AREA OF SURFACE MOUNDS

SCALE

0 300 600 FEET

FIGURE 1-2
SITE MAP
RANGES NEAR TRAINING AREA T-24A
PARCELS 187(7), 112Q, 113Q-X, 213Q AND 214Q

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

DRAFT. CHCK. BY:
ENGR. CHCK. BY: J. JENKINS
PROJ. MGR.: J. YACOUB
PROJ. NO.: 796887

DATE LAST REV.:
DRAWN BY:

STARTING DATE: 04/13/00
DRAWN BY: D. BILLINGSLEY

INITIATOR: J. JENKINS
DWG. NO.: ...\796887es.065

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- Supertropical bleach (STB)
- Decontamination Solution Number 2 (DS2).

STB. STB is referred to as bleach, bleaching powder, supertropical bleach, bleaching material, or chlorinated lime. STB is a white powder containing about 30 percent available chlorine (U.S. Department of Army and Air Force, 1963).

DS2. DS2 is a clear solution general-purpose decontaminant consisting of 70 percent diethylenetriamine, 28 percent solvent (ethylene glycol monomethylether), and 2 percent active agent booster (sodium hydroxide). DS2 decontaminant reacts with GB and HD to effectively reduce their hazard within 5 minutes of application. It is effective for all toxic chemical agents. DS2 was applied manually or by using a portable decontaminating apparatus such as the M11 (U.S. Department of Army and Air Force, 1963).

1.3.2 Former Machine Gun Range, Parcel 112Q, Site Description and History

The Former Machine Gun Range, Parcel 112Q covers approximately 1,400 acres and is shown on Figure 1-1. The dates of use and types of ordnance fired at this range are unknown, but the range appears on a 1959 map. The direction of fire is toward the south and the surface danger zone (SDZ) is displayed on the map. During a recent site walk by IT, a linear east-west trending mound parallel to the access road was observed in the western portion of the study area (Figure 1-2). The mound is assumed to be the target area or a portion of the target area for this range, however a distinctive firing line could not be determined. Additional information regarding the Former Machine Gun Range is not available (Environmental Science and Engineering, Inc. [ESE], 1998).

1.3.3 Former Demolition Area, Parcel 113Q-X, Site Description and History

The Former Demolition Area, Parcel 113Q-X, is located in the central portion of the study area (Figure 1-1), overlapping the area designated as Parcel 187(7). The Former Demolition Area, Parcel 113Q-X, occupies approximately 3 acres. The dates of use and types of activities that occurred here are unknown, but this area is identified as a demolition area on a 1959 map.

1.3.4 Former Bandholtz Machine Gun Qualification Range, Parcel 213Q, Site Description and History

A map entitled "Ranges, 1948" (New South Associates, 1992) identifies a range in the southeast area of the Main Post as the Former Bandholtz Machine Gun Qualification Range, Parcel 213Q, and shows the approximate location (Figure 1-1). The area of Parcel 213Q is approximately 460 acres. Evidence of the firing line of the Former Bandholtz Machine Gun Qualification Range, Parcel 213Q appears as a north-south trending level area along an east-facing slope at the study area (Figure 1-2). The impact area for this range appears to be approximately 1,600 feet to 2,000 feet due east of the firing line in an area characterized by conical mounds and circular surface depressions interconnected with shallow (less than 1 to 3 feet deep) trenches (Figure 1-2). Ordnance fired at this range is assumed to have been restricted to small arms. Additional information is not available regarding the Former Bandholtz Machine Gun Qualification Range, dates of use, or operation (Environmental Science and Engineering, Inc. [ESE], 1998).

1.3.5 Former Bandholtz Field Firing Range, Parcel 214Q, Site Description and History

The map entitled "Ranges, 1948," (New South Associates, 1992) identifies a range in the southeast area of the Main Post as Bandholtz Field Firing Range No. 2. The direction of fire is toward the northeast and the SDZ is displayed (Figure 1-1). The area of this range is over 1,900 acres. The firing line appears as a northwest-southeast trending level area on the east-facing slope of the study area (Figure 1-2). The target area and probable impact areas were not observed in a recent site walk by IT, but are likely to be in the vicinity of a west-facing slope approximately 1,000 feet northeast of the firing line. Ordnance fired at this range is assumed to have been restricted to small arms. Additional information is not available regarding this range, dates of use, or operation.

1.4 Ranges Near Training Area T-24A Historic Aerial Photographic Analysis

The following descriptions were obtained from aerial photographs taken in 1949, 1954, 1957, 1961, 1969, and 1972 (Figures 1-3 through 1-8) (U.S. Environmental Protection Agency [EPA], 1983). The approximate layout of Parcel 187(7), and portions of the boundaries of Parcel 112Q, 213Q, and 214Q are shown for reference. The legend for the aerial photograph descriptions is included in Table 1-1.

March 2, 1949, Figure 1-3. A firing range is present at the Ranges Near Training Area T- 24A. The ranges are situated in a shallow natural basin, through which a number of drainage routes pass en route to the creek bed to the north. Some of these routes have incised into the range surface. The main vehicle access road enters the range from the northwest. Indistinct, possibly mounded material is noted on a small spur of this road north of the site. Activity at the

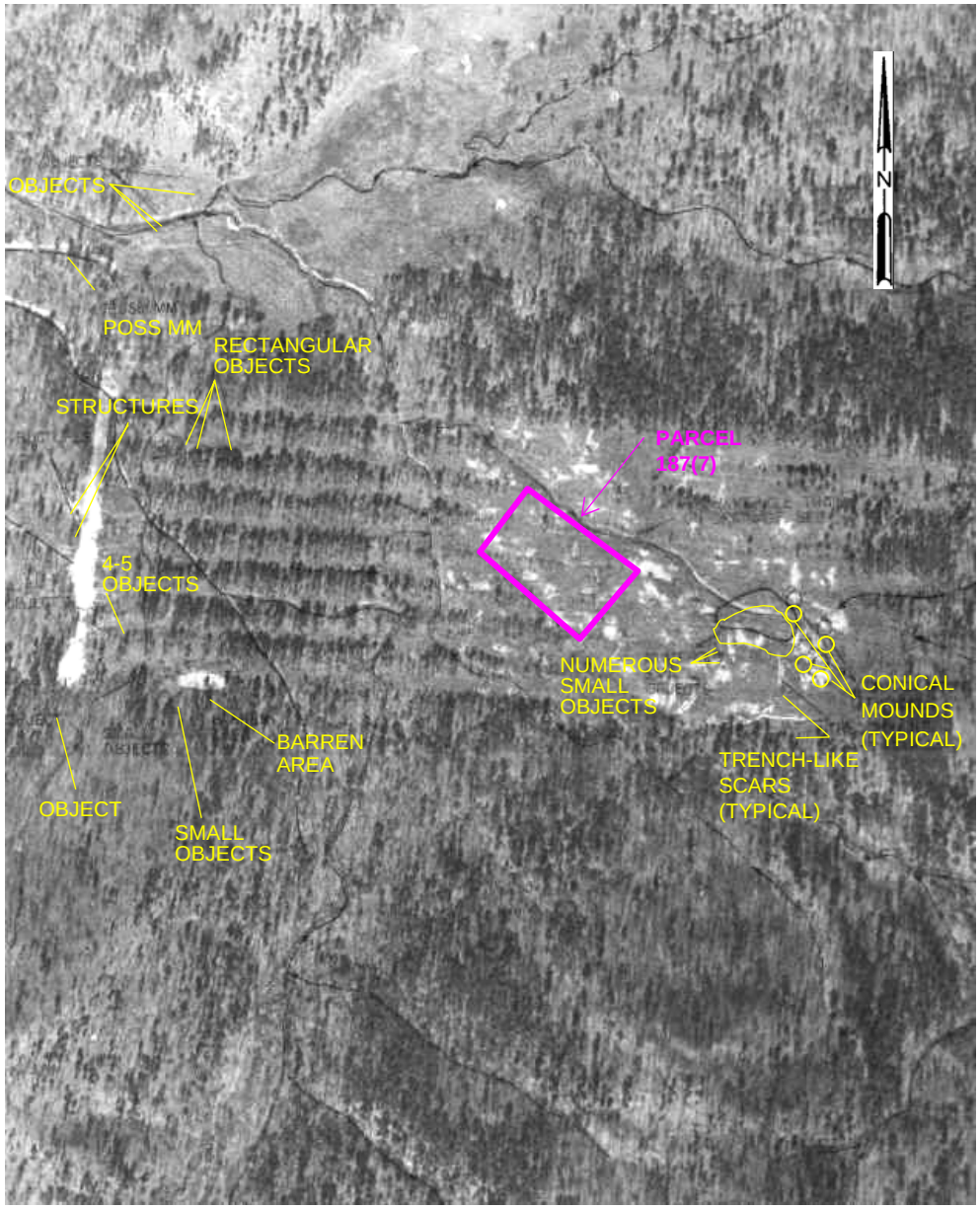

Figure 1-3

Ranges Near Training Area T-24A,
Parcels 187(7), 112Q, 113Q-X, 213Q and 214Q

March 2, 1949
Aerial Photography
Approximate Scale 1”=600’

Source: U.S. EPA, 1983,
Research and Development
Fort McClellan 24 Alpha, T-38, Range J, Alabama
(TS-PIC-83003)
Environmental Photographic Interpretation Center
Environmental Monitoring System Laboratory

U.S. Army Corps of Engineers
Mobile District
Fort McClellan
Calhoun County, Alabama
Contract No. DACA21-96-D-0018

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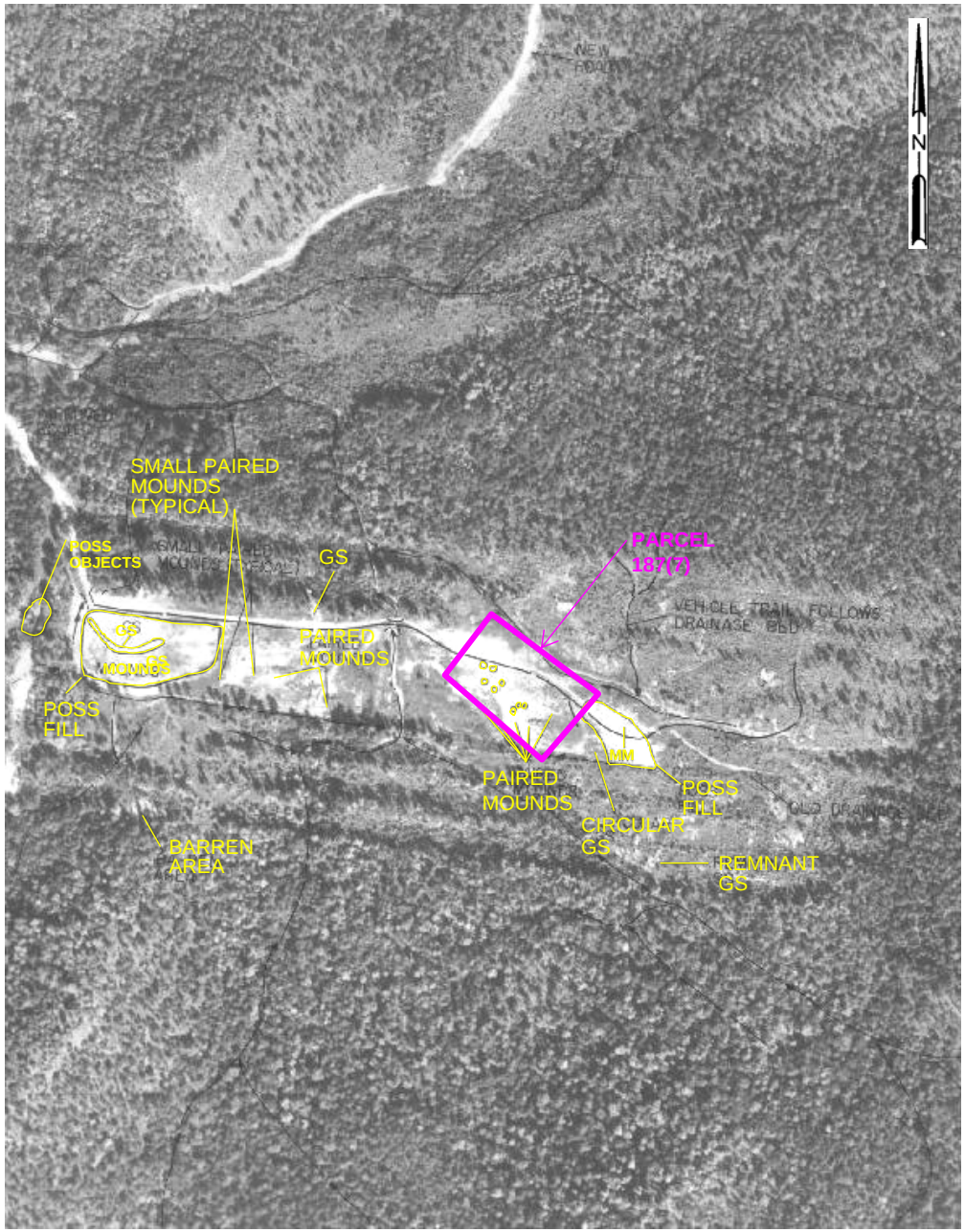

Figure 1-4

Ranges Near Training Area T-24A,
Parcels 187(7), 112Q, 113Q-X, 213Q and 214Q

October 17, 1954
Aerial Photography
Approximate Scale 1”=600’

Source: U.S. EPA, 1983,
Research and Development
Fort McClellan 24 Alpha, T-38, Range J, Alabama
(TS-PIC-83003)
Environmental Photographic Interpretation Center
Environmental Monitoring System Laboratory

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